REMARKS

The Invention

The invention features nucleic acids encoding attractin polypeptides and fusion proteins containing attractin polypeptides, vectors containing the nucleic acids, cells containing the vectors, and methods of making the polypeptides and the fusion proteins.

Telephone interviews

Applicants thank the Examiner, Examiner Chan, and Examiner Stanton for their courteous and helpful comments in telephone interviews with Applicants' representatives, Dr. Janis Fraser and Dr. Stuart Macphail, on June 30, 2004, and July 15, 2004.

Status of the claims

Claims 1-46 are pending and claims 1-3, 6, 20-27, and 38-46 are under consideration in this application, claims 4-5, 7-19, and 28-37 having been withdrawn from consideration on the grounds that they are allegedly drawn to separate inventions. Claims 2, 3, and 38-40 are allowed, and claims 1, 6, 20-27, and 41-46 are rejected. After entry of the amendments made herein, claims 1-3, 6, 10-14,, and 20-56 will be pending, and claims 1-3, 6, 20-27, and 38-51 will be under consideration in this application, claims 47-56 having been newly added and claims 4-5, 7-9, and 15-19 having been cancelled without prejudice to their being presented in a separate application. None of the amendments made herein add new matter.

In the telephone interview on July 15, 2004, Examiner Stanton indicated that a claim such as new claim 49 would be enabled by Examples 3, 8, and 9 of the specification. These examples describe four attractin splice variant polypeptides encoded by the attractin gene. The shortest splice variant is that with SEQ ID NO:2. The other attractin splice variants include, in addition to SEQ ID NO:2, one or both of: (a) a 74 amino acid sequence inserted immediately after amino acid 30 of SEQ ID NO:2 (see Example 9 and compare, e.g., Figures 2 and 13); and (b) a 157 amino acid sequence added to the C-terminus of SEQ ID NO:2 that includes a transmembrane domain and a cytoplasmic domain (see Example 8 and compare, e.g., Figures 2 and 3).

Moreover, in attractin polypeptides containing the additional 157 amino acid sequence, four out of five of the amino acids corresponding to the C-terminal five amino acids of SEQ ID NO:2 are different from the C-terminal five amino acids of SEQ ID NO:2 (see Example 8 and compare, e.g., Figures 2 and 3). Polypeptides without the 74 amino acid insert are designated "attractin-1" and those with the 74 amino acid insert are designated "attractin-2." The polypeptides without the 157 amino acid addition are designated "soluble attractin", while those with the 157 amino acid addition are termed "membrane attractin".

Thus, the four splice variant attractin polypeptides are designated soluble attractin-1 (SEQ ID NO:2), soluble attractin-2 (SEQ ID NO:18), membrane attractin-1 (SEQ ID NO:10), and membrane attractin-2 (SEQ ID NO:12), with soluble attractin-1 (SEQ ID NO:2) containing neither the 74 amino acid insert nor the 157 amino acid addition and membrane attractin-2 (SEQ ID NO:12) containing both. In that soluble attractin-1 (SEQ ID NO:2, the shortest attractin polypeptide) has the functional activity specified by claim 49 (i.e., the ability to enhance spreading of a macrophage or a monocyte), one of skill in the art would consider it likely that variants of SEQ ID NO:12 containing none to all of the 74 amino acid insert (amino acids 31-104 of SEQ ID NO:12) and none to all of a segment consisting of the 157 amino acid addition plus the five amino sequence corresponding to the C-terminal five amino acids of SEQ ID NO:2 (a total of 162 amino acids, i.e., amino acids 1268-1429 of SEQ ID NO:12) would also have the specified function. Moreover, one skilled in the art would expect that substitutions, especially conservative substitutions, could be made, without loss of the specified function in the dispensible insert and addition fragments. The DNAs of claims 49-50 are also adequately described by the specification, e.g., at page 4, lines 4-8; page 7, lines 10-20; and page 14, line 7, to page 15, line 20; in Examples 2, 3, 8, and 9 together with Figures 2 and 13; and the Sequence Listing.

Once the nucleic acid claims under consideration have been held allowable, Applicants propose, pursuant to 37 C.F.R. § 1.121, to rejoin claims directed to methods of using the nucleic acid that are currently pending in the application and to request entry of suitable new method of use claims. Relevant pending "method of use" claims include, for example, claims 10 and 32.

In this regard, claim 10 has been rewritten as an independent claim; it incorporates all the limitations of parent claim 8 amended to be consistent with amended claim 6 and new claim 47 (see below). The dependency of claim 11 has been changed from claim 8 to claim 10. Claim 32 has also been amended to be consistent with claim 6 and new claim 47 and new claims 52-56 (depending from claim 32) corresponding to originally filed claims 11-14 and 37, respectively, have been added.

35 U.S.C. § 112, first paragraph, rejections

(a) Claims 1, 6, 20-27, and 41-46 stand rejected on the grounds that the specification allegedly does not enable any person skilled in the art to which it pertains to make and use the invention commensurate in scope with the claims. Applicants respectfully traverse this rejection.

The Examiner and Examiner Stanton indicated in the telephone interviews referred to above that claim 6 amended as above would be enabled by the instant specification. Because the Examiners indicated that an "antigenic fragment of SEQ ID NO:12" is enabled by the specification, Applicants have added new claim 47, which specifies an isolated DNA encoding a polypeptide containing an antigenic fragment of SEQ ID NO:12, and dependent claim 48. The amendments to claim 6 and new claims 47 and 48 are supported by the specification (e.g., at page 9, lines 20-21, and page 35, lines 2-4) and thus add no new matter.

From the comments on page 2 to page 6 of the Office Action, taken in the context of those made by the Examiner, Examiner Chan, and Examiner Stanton, Applicants understand the position of the U.S. Patent and Trademark Office (USPTO) to be that, while the specification contains adequate written description for claims 1 and 41-45 and provides adequate teaching on how to use DNAs within the scope these claims, it does not provide sufficient guidance to one skilled in the art on how to make such DNAs. Applicants disagree with this position on the ground that it is logically inconsistent, at least for the presently claimed invention.

While it is theoretically possible that for some inventions the level of teaching necessary to satisfy the how-to-make enablement requirement may be higher than that necessary to satisfy the written description requirement, Applicants respectfully submit that this is not true for

nucleic acid inventions such as presently claimed. The art of molecular biology is extraordinarily highly developed and practitioners in the field are very highly skilled. Methods of making any given sequence are well known and utterly routine (e.g., see Examples 3, 8 and 9 of the instant specification). Thus, once a nucleic acid is described, a molecular biologist of ordinary skill would be able to employ standard, straightforward laboratory techniques in order to make it. To hold otherwise flies in the face of Standard USPTO practice, which heretofore has been that when a specification provides enough descriptive information to satisfy the criteria for a nucleic acid claim, as set out in the USPTO's "Revised Interim Guidelines for the Examination of Patent Applications Under the 35 U.S.C. §112, paragraph 1, 'Written Description' Requirements" ("Written Description Guidelines"), that claim will not be rejected for inadequate description of how-to-make the claimed nucleic acids.

As pointed out in the Applicants' responses submitted on April 30, 2003, and February 13, 2004, the present specification more than satisfies the criteria for written description support for the present claims as promulgated in the USPTO's own Written Description Guidelines. Indeed, the Examiner acknowledged as much by withdrawing in the Office Action of July 15, 2003, and the present Office Action the previous rejections for lack of written description. Therefore, Applicants respectfully submit that, given the teachings of the instant specification, one skilled in the art would know how to make the DNAs specified by claims 1 and 41-45.

Should the Examiner so desire, Applicants will provide him with examples of recently issued U.S. patents containing claims analogous to claims 1 and 41-45, but with no more disclosure in their respective specifications on how to make the relevant claimed nucleic acids than is provided in the present specification.

(b) Claims 6, 24-27, and 46 stand rejected on the ground that they allegedly contain subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention. Claims 24-27 and 46 depend from claim 6.

The Examiner and Examiner Stanton indicated in the telephone interviews that the above amendment to claim 6 would obviate both the enablement and written description rejections of claim 6 and its dependents.

In light of the above considerations, Applicants respectfully request that the rejections under 35 U.S.C. § 112, paragraph 1, be withdrawn.

CONCLUSION

In summary, for the reasons set forth above, Applicants maintain that the pending claims patentably define the invention. Applicants request that the Examiner reconsider the rejections as set forth in the Office Action, and permit the pending claims to pass to allowance.

If the Examiner would like to discuss any of the issues raised in the Office Action, Applicants' undersigned representative can be reached at the telephone number listed below.

Enclosed herewith is a request for an automatic extension of time and a check in payment of the extension in time. Please apply any other charges or credits to deposit account 06-1050, referencing Attorney Docket No. 00530-089002.

Respectfully submitted,

Date: 8/10/04

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